59. pH Measurement of Six Muscles of Bactrian Camels (*Camelus bactrianus)* From Kazakhstan

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Introduction

The camel is one of the most fundamental pillars of the national economy and the food security of arid and semi-arid regions. Camels can provide human with high quality meat.

In Kazakhstan, three types of camels are available (Bactrian, Dromedary and their hybrids), the Bactrian is predominant (80% of the 148,000 heads) and used for meat and wool productions. The demand for camel meat appears to be increasing due to health reasons, as they produce carcasses with less fat as well as having less cholesterol and relatively high polyunsaturated fatty acids than other meat livestock (Kadim *et al*., 2008).

The ultimate pH of muscle is regarded as one of the important parameters affecting meat quality and largely dependent on glycogen content. Meat quality parameters of Bactrian camel received little attention and marketing system for camel meat requires more information on muscle pH values of various muscles due to its effect on quality parameters. Identification quality characteristics of individual camel muscles will increase the demand for their products. The objective of this study was to determine ultimate pH of *infraspinatus, triceps brachii, longissimus thoraces, biceps femoris, semitendinosus, and semimembranosus* muscles.

Materials and Method

The *infraspinatus, triceps brachii, longissimus thoracis, Biceps femoris, semitendinosus* and *semimembranosus* muscles were removed from the left and right sides of three year-old Bactrian camel carcasses within 20 min postmortem. Samples were kept in the chiller (1-3°C) for 48 hrs. The pH of the six muscles was monitored using a portable pH meter (Hanna waterproof pH meter, Model Hi 9025, Italy) fitted with a polypropylene spear-type gel electrode (Hanna Hi 1230) and a temperature adjusting probe. pH measurements were recorded at 40 min, and 2, 4, 8, 24 and 48 hrs post-mortem. The general liner model, ANOVA procedure within SAS (1993) was used to compare the six muscles on pH values.

Results and Discussion

Average pH time curves for six muscles are presented in Figure 1. Small variation in pH values between six muscles might be due to variation in muscle fiber types, which contributed in differences in patterns of muscle metabolism (Swatland, 1982), and consequently differences in ultimate pH value. Changes in glycolysis within time postmortem were monitored by measuring the rate of pH fall after slaughter, and post-mortem time taken by muscles to reach a pH of 6.0. After a relatively fast fall within the first two hours, the mean pH values underwent a slow decline until an ultimate pH at 48 hours post-mortem. These findings are in accordance with those of Kadim *et al*., (2009) a fast decline in pH within the first 3-4 hours in meat from camels. The time needed for muscle pH values to reach 6.0, is a reflection of rigor onset. In the present study, the time to pH 6.0 ranged from 2.00 to 2.30 hours (Figure 1). Reduction of the time required for muscles to reach pH 6.0 is of very practical importance. The ultimate pH values across the selected muscles were ranged from 5.5 to 5.8. The muscle *semimembranosus* had lowest pH value at 12 hrs postmortem, while *Infraspinatus* had the highest value. The difference between the two muscles appeared more obvious. Respectably, the ultimate pH of *semimembranosus* was 6.07 after slaughter, in contrary, the muscle *semimembranosus* pH was 6.83 this indicated that under the same conditions locations of muscles effect on the pH value of muscles. Other muscle's pH decline was similar.

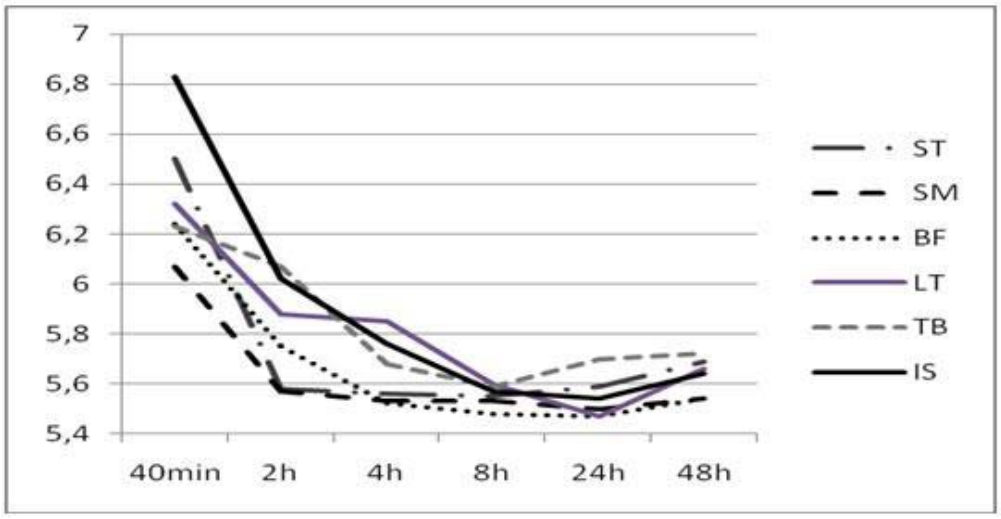

Figure 1. Mean changes in pH within infraspinatus (IS), triceps brachii TB), longissimus thoraces (LT), biceps femoris (BF), semitendinosus (ST), and semimembranosus (SM) muscles in carcass from Bactrian camel.

In conclusion, muscle locations had a small effect on decline pH. The decline in pH of the Bactrian camel muscles had similar pattern to those of the dromedary camel.

References

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